



California State Assembly Select Committee on California's Green Economy

How to Grow Jobs and Investment in California's Green Economy

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Introduction

Over the last four decades the State of California, through legislation and regulation has laid the groundwork for relatively rapid growth in sectors of the economy that are now collectively known as the “green” economy. While there are a number of definitions and categorizations of the green economy, for the purposes of this report, the definition developed by California’s Employment Development Department (EDD) has been adopted for its parsimony, inclusiveness, and cleverness. EDD defines employment in the “Green Economy” as follows:

Generating and storing renewable energy

Recycling existing materials

Energy efficient product manufacturing, distribution, construction, installation, and maintenance

Education, compliance and awareness

Natural and sustainable manufacturing

Over the last decade, and particularly over the last few years, investment and employment in the green economy has grown very rapidly. Due to the worldwide financial meltdown, venture capital investments in California have dropped. However, investments in clean technology firms, primarily in energy generation followed by energy efficiency and clean transportation rebounded faster than investments in other sectors. Between 2005 and 2009 \$2.1 billion in venture capital was invested in the green economy. In 2009 “clean tech” investments in California amounted to one quarter of all venture capital investments statewide and represent sixty percent of green venture capital in North America.

This investment in the green economy is also leading to growth of green jobs. According to California’s Economic Development Department, more than 500,000 Californians are at work in jobs that fit into one of the categories of the green economy. That number is projected to grow to 1.2 million by 2020. Additionally, while manufacturing in the traditional economy has declined it has actually increased in green economy, having grown 19% between 1995 and 2008.

Greening the economy has the potential to create jobs, ensure real, sustainable economic growth, prevent environmental pollution, mitigate climate change, resource depletion, environmental degradation, and reduce social and health disparities.

Background

Recognizing that growing California's green economy is an important way to address both local and large scale economic and environmental problems, Speaker of the California State Assembly, John A. Pérez, granted Assemblymember Pedro Nava the opportunity to conduct a series of informational briefings that included participation from numerous "green" businesses, local governments, state agencies, researchers, and educational institutions. Assemblymember Nava intended that the select committee be a forum for entrepreneurs, government officials, and experts to share ideas, identify barriers, and encourage investment and job creation to grow the green economy.

In planning the informational briefings, a series of objectives/questions were established:

1. **Research and Development to Deployment** – How can products being developed get to market faster?
2. **Financing growth of Green Economy** - What are the hurdles to financing? (Insurance, Regulations, other factors)
3. **Local/State/Federal Government Participation** – What incentives are currently being offered? Can permitting processes be streamlined without jeopardizing public health and ensuring environmental protection?
4. **Manufacturing** - How can we "Keep it Local" and expand manufacturing employment in California?

To answer these questions, seven informational briefings were scheduled at various locations throughout the state. Representatives from universities, community colleges, local governments, state government, and numerous businesses were invited to participate.

- UC Merced - September 9, 2010
- CSU Channel Islands - September 16, 2010
- Fresno City Council Chambers - September 21, 2010
- California State Capitol - October 5, 2010
- City of Los Angeles City Hall - October 18, 2010
- San Mateo County Board of Supervisors Chambers - October 22, 2010
- San Diego Miramar College – November 4, 2010

There have already been numerous studies and reports on the topic of innovation in the green economy over the last 10 years; this report is not intended to encapsulate or even incorporate all of that work. It is intended to be an avenue of communications between people working at growing the green economy and policymakers.

Both Governor Schwarzenegger's Administration and the Legislature have made significant efforts to promote clean energy generation, reduce waste, improve energy efficiency, and create jobs. An overview of current state activities is in Appendix 1. A list including brief descriptions of legislative activity over the last 10 years is in Appendix 2.

Policy Recommendations

As mentioned above, Assemblymember Nava convened seven informational briefings that covered a number of topics and sectors related to California's green economy. Briefings took place in various regions in the state and included speakers from various business interests, local government representatives, educational institutions, nonprofits, and state government representatives.

At the briefings Assemblymember Nava elicited policy recommendations from the participants. The following is a list of the recommendations produced at the informational briefings by sector. The policy recommendations do not take into consideration the ongoing fiscal crisis faced by the state and the majority of the recommendations would require the development of revenue sources. The recommendations do not reflect a consensus of all of the participants at each of the briefings, but are an amalgamation of nearly all of the ideas put forward.

Water Use Efficiency

Improving how Californians manage water is critically important for a number of reasons and has been the subject of rigorous study by state agencies and nonprofit organizations. Scientific consensus holds that climate change will lead to increases in the frequency and intensity of droughts and reduce the amount of water that can naturally be stored in the Sierra snow pack. Additionally, a study by NASA based on aerial imagery, indicates that that over-draft from the underground aquifer(s) in the southern Central Valley is estimated at over 2 million acre-feet annually due primarily to the irrigation of crops. It is increasingly necessary to address this growing problem through increased water use efficiency and careful planning.

Aside from growing demand associated with population growth and the potentially diminishing supply associated with the impact of climate change, the use of water consumes a large portion of the state's energy. According to the CEC, water-related energy use consumes 19 percent of the state's electricity, 30 percent of its natural gas, and 88 billion gallons of diesel fuel every year – and this demand is growing.

Increasing water use efficiency will not only help mitigate the impacts of climate change it will help California reduce emissions associated with climate change. The legislature has passed legislation that sets aggressive targets for urban water consumption (e.g. AB 1881 by Laird in 2006) and cities such as Los Angeles have implemented a number of water efficiency efforts. As part of the Seventh Extraordinary Session in 2010 the Legislature also passed SB 7X 7, which requires agricultural water management plans and efficient water management practices for agricultural water suppliers, and promotes expanded development of sustainable water supplies at the regional level.

Participants at informational briefings that included discussions on water use efficiency:

Dr. David Zoldoske is the Director of the Center for Irrigation Technology at CSU Fresno where he oversees research and development of cutting edge irrigation technology. He is the author of numerous research articles on irrigation efficiency, water conservation, and exportation of irrigation technology. Dr. Zoldoske serves on the Agricultural Stakeholder Committee Established by SB 7X 7 (Steinberg, 2009) and on the California Urban Water Conservation Council that developed recommendations pursuant to AB 2717 (Laird, 2004). He is also the past president of the Irrigation Association.

Pat McIntyre has, since May 2009, served as Chairman and Chief Executive Officer of ET Water, a technology company in the commercial irrigation market. ET Water Systems (the ET stands for [evapotranspiration](#)) marry local weather data, horticulture and irrigation science and the power of IT to ensure that landscaping receives only the water it needs based on the type of plants being watered, their root depth, the type of soil, plant microclimate, the slope of landscape, irrigation method and weather.

Policy Recommendations Based on Testimony in Panel on Water Use Efficiency:

- 1. Develop standardized water budgeting methodologies across water districts.** Mr. McEntyre pointed out that throughout the state water districts have differing methodologies for evaluating and measuring water budgets. He suggested that a statewide standard be developed for more effective evaluation of efficiency Measures.
- 2. Acceleration of statewide metering.** Both panelists emphasized the importance of knowing how much water individuals and businesses are using.
- 3. Acceleration of tiered pricing for urban water users.** The price of water is one of the most important incentives for increasing water use efficiency and increasing the use of tiered pricing structures throughout the state would improve efficiency among commercial and residential users.
- 4. Increased enforcement and public education of current water use regulations.** Many city ordinances related to what day watering is allowed and prohibiting run off are not well enforced and rarely result in penalties for violators.
- 5. Increased use of financial incentives and funding for water use efficiency products.** Increase the use of tax credits and grants for investments in water use efficiency. For agricultural water users, the federal Environmental Quality Improvement Program (EQIP) program offers a variety of grants and incentives for conservation efforts. However, every year there are significantly

more applicants than there are funds and incentives available. In a recent study produced by the Agricultural Water Management Council and the California Farm Water Coalition, the majority of growers surveyed identified cost as a barrier to improving irrigation efficiency.

6. **All controllers sold in California should conform to the Irrigation Associations protocol for Smart Controllers.** “Smart Controllers” are irrigation controllers that automatically update the watering schedule to allow for changes in water needs throughout the year based on weather and soil moisture. Increasing the number of smart controllers in use for landscape irrigation in residential and commercial settings could provide for substantial urban water-use savings, reduce run-off, and savings for metered rate payers.

Clean Transportation

Transportation is the leading source of both smog forming air pollution and greenhouse gas emissions in California. Reliance on inefficient, fossil fuel vehicles adversely affects public health and continues to exacerbate our dependence on foreign oil. Requiring auto manufacturers to improve fuel efficiency and stimulating the use of electric and alternative vehicle fuels will result in cleaner air and greater energy security. As domestic oil production has declined U.S. Dependence on foreign oil has increased from 15 to 50% over the last 15 years.

In looking at this sector of California’s green economy, Assemblymember Nava heard from several businesses that are involved in either reducing emissions from vehicles, manufacturing clean vehicle components, manufacturing electric or hybrid vehicles, producing biofuels, or are otherwise involved in clean transportation business development.

Among the participants there was broad support and approval for the tax exemptions created by SB 71 (Padilla, 2010), the programs stemming from AB 118 (Núñez, 2007), the continued implementation of AB 32 (Núñez, 2006), and for the Air Resources Board Zero Emission Vehicle Program.

Participants at informational briefings that included discussions on clean vehicles:

John Boesel, President and CEO, CALSTART, a member-supported organization of more than 140 firms, fleets and agencies worldwide dedicated to supporting a growing high-tech, clean transportation industry that cleans the air, creates jobs, cuts imported oil and reduces global warming emissions.

Mark A. Yragui, President of Cummins Cal Pacific and Scott Ruhlen, Director of Business Development Cummins CalPacific, a corporation of complementary business units that design, manufacture, distribute, and service electric power generation

systems, engines, and related technologies, including fuel systems, controls, air handling, filtration, and emissions solutions.

Dennis Hogan, COO & CFO Phoenix Motorcars, which has just begun manufacturing zero-emission, freeway-speed fleet vehicles with a range of 70 miles in Ontario, CA.

Abas Goodarzi, Ph.D., President and CEO of US Hybrid Corporation. US Hybrid specializes in the design and manufacture of power conversion systems for medium and heavy-duty electric, hybrid, and fuel cell commercial buses and trucks to enable them to become more reliable and fuel-efficient, with lower emissions and better responsiveness.

Jim Crouse, Executive Vice President of Sales & Marketing for Capstone Turbine Corporation, which produces low-emission microturbine systems, and was first to market with commercially viable air bearing turbine technology. The company has shipped thousands of Capstone turbines to customers worldwide. These award-winning systems have logged millions of documented runtime operating hours.

David Mazaika, CEO of Quantum Technologies, Inc., which is a global renewable technology company in Southern California. Quantum Technologies focus their business in the following topics: automotive, energy, aerospace and the security sector of clean and renewable solutions.

Carter Brown, CEO of Boulder Electric Vehicle. Boulder Electric Vehicles is based out of Lafayette, Colorado. Boulder EV, which manufactures all electric delivery trucks and cargo vans, was recently awarded a \$3 million loan from AB 118 to build a new manufacturing plant in Los Angeles.

Former State Controller Steve Westly, Managing Partner of the Westly Group, a venture capital firm that focuses primarily on clean technology companies participated in the San Mateo County briefing.

Lisa Mortensen, Co-founder and CEO of Community Fuels, a biodiesel producer based in Stockton, CA. Community Fuels' Stockton plant has a capacity of 10 million gallons a year and sells biodiesel throughout the United States and exports to Asia.

Policy Recommendations Based on Testimony at briefings that included clean transportation:

- 1. Regulations should be consistent and durable.** Many of the participants emphasized that businesses need predictability. While some voiced opposition to efforts like proposition 23, others said they had lost business due to uncertainty over the Air Resources Board's off road diesel rules.
- 2. Provide incentives for purchasing low and zero emission vehicles.** One proposal was that the state should provide a refund of \$2,500 for anyone who buys a vehicle that gets over 100 miles per gallon (MPG). This would include

any electric, some plug in hybrids and some hydrogen cars. There should be an offsetting \$2,500 tax for anyone who buys a car that gets a specified MPG determined to be too low. The specific numbers aside, the general idea would be to have a tax that is inversely proportional to fuel efficiency of a passenger vehicle with a balance point at the desired efficiency level. With the passage of Proposition 26, even if such a policy were revenue neutral, it would require passage by 2/3 of the legislature.

3. Put a price on emissions and/or increase the cost of petroleum based fuels. Many of the participants suggested that the price of fuels, which is lower in the United States than anywhere else in the developed world, weakens the incentive to purchase fuel efficient or alternative fueled vehicles despite the number of environmental, public health, increased energy independence, and longer term economic benefits to be gained. Two specific means of increasing the cost of petroleum based fuels were suggested:

- a. CALSTART, through its California Secure Transportation Energy Partnership (CALSTEP) has recommended that California implement a variable transportation fuel surcharge that moves inversely with the price of oil. This surcharge would help the state achieve many economic and environmental policy goals:
 - i. Reduce the state's petroleum dependence by encouraging reductions in travel and increased use of clean and efficient alternatives.
 - ii. Reduce gas price volatility for consumers and businesses.
 - iii. Encourage the development of clean transportation technologies by stabilizing the price of gasoline and diesel, thereby providing consistent, long-term price signals for investors and entrepreneurs.
 - iv. Funds could be used to pay for badly needed maintenance and repairs to transportation infrastructure or to expand AB 118 funding or other efforts to reduce emission and fossil fuel use.
- b. The second proposal directly related to increasing the price of fuel is that the fuel tax does not raise adequate revenues to maintain or improve California's transportation infrastructure. This proposal is consistent with a similar Legislative Analysts Office (LAO) recommendation on transportation infrastructure funding. The California Transportation Commission estimates the state's unmet transportation needs at \$117 billion over the next ten years, due in large part to insufficient fuel tax revenues. It is estimated that poorly maintained roads cost the average California driver \$550 annually in repair costs associated with poor road conditions. This proposal would serve to solve a number of problems while also increasing the incentive to use more fuel-efficient passenger vehicles. In the short-term, the LAO recommends raising the gas tax. In the long-term, they recommend exploring new ways of funding transportation programs, including charging drivers based on the miles traveled.

4. **Place a cost on emissions.** Virtually all of the participants were in support of monetizing emissions. The California Air Resources Board has developed a “cap and trade,” system that will effectively place a cost on emissions, however, under the regulations which will be voted on in December 2010 by the ARB (described very succinctly here: <http://www.arb.ca.gov/newsrel/2010/capandtrade.pdf>), transportation fuels will not be significantly affected until 2015 when the cap increases to include the combustion of fuels.

Suggestions at the informational briefing included a carbon tax that included vehicle emissions and allowing for the issuance of tradable credits from converting vehicles to Zero Emission Vehicles.

5. **Expand financial assistance for California clean-tech manufacturers.** One proposal that was specifically mentioned was to allow the California Alternative Energy and Advanced Transportation Financing Authority to approve a clean tech related projects by California based companies for financial assistance in the form of a sales and use tax exclusions, in order to promote the creation of California-based manufacturing, California-based jobs, the reduction of greenhouse gases, or reductions in air and water pollution or energy consumption.

This proposal would also entail the establishment of a Clean Energy and Fuels Manufacturing Financial Assistance Program. This program would provide successful applicants with a range of financial assistance potentially including bond financing, loans, loan loss reserve, or risk-sharing loan guarantees in order to promote the creation of California-based manufacturing. This idea was proposed by Assemblymember Blumenfield in the August 2nd version of AB 684 in the 2009-10 legislative session.

6. **Expand AB 118 Funds.** Participants pointed out that the AB 118 program’s Hybrid Truck and Bus Voucher Incentive Project (HVIP) ran out of vouchers by last August. Vouchers were widely touted as an excellent demand driver and, while no revenue source was specifically identified, expansion of the program was widely suggested. Revenues for this could potentially be generated by the variable transportation fuel surcharge described above.
7. **Exempt biofuels from fuel excise tax.** The goal of this policy would be to be to increase demand for biofuels relative to petroleum based fuels. In order for this policy to be consistent with state goals of reducing carbon intensity of fuels, a life cycle analysis of fuels would have to be conducted. To spur job creation in California the exemption could only apply to biofuels produced in California. A brief attempt was made at this in 2008 with AB 2240 by Tran and Price, but was never brought up for a vote in Assembly Revenue and Taxation Committee.

8. **Expand the use of renewable natural gas (aka Biomethane) as a transportation fuel.** Compared to conventional natural gas, compressed natural gas, hydrogen, or electric powered vehicles (when lifecycle is examined), biomethane has substantially lower carbon intensity than other fuels. There are numerous potential sources in renewable natural gas in California including dairies, on farm manure management, crop residues, food processing waste, slaughterhouse waste, rendering plant wastewater, and green waste from municipal and commercial collection programs.

Sweden and other European countries have converted thousands of trucks and buses to run on domestically produced biomethane. In California a substantial effort has already been made to convert more vehicles to fossil based natural gas, while cleaner burning than gasoline or diesel, biomethane would be a preferable alternative.

Significant incentives to both create demand and develop a supply infrastructure would be needed, but the greenhouse gas, air quality, and increased energy independence potentially derived from development of a biomethane market are compelling reasons to foster its growth. The CEC has allocated some AB 118 funds to biomethane production facilities in the past year. To develop necessary infrastructure including transport and storage of biomethane, more initial funding to develop the market for this product will likely be necessary.

CALSTART, Sustainable Conservation, and others have done substantial work in developing ideas in this area and CALSTART along with Sempra Energy and Southern California Edison hosting an event entitled “Jumpstarting Renewable Natural Gas for Transportation Workshop: Connecting Producers, Distributors and Fleet Users” was held on November 18, 2010 in Downey, CA.

Renewable Energy

As noted in Governor Schwarzenegger’s Executive Order S-21-09, which set a goal of obtaining 33% of California’s energy from renewable sources by 2020, producing renewable electricity provides numerous benefits to California’s environment and economy, including improving air quality and public health, reducing global warming, diversifying the state’s energy supply, improving energy security, enhancing economic development and creating jobs.

Power plants in California represent more than one-fifth of the state’s greenhouse gas emissions and along with aggressive energy efficiency goals, increasing the use of clean, renewable energy is essential to improving air quality and reducing climate change emissions.

Increasing renewable energy development will require a cohesive and integrated statewide strategy by California's energy and environmental agencies. This could include both improving the efficiency of the permitting process as well as expanded mandates and increased incentives.

Participants at informational briefings that included discussions on renewable energy included:

Janet M. Gagnon, Esq. Head of Government Relations at Solar World. Solar World, one of the largest solar manufacturers in the world, has facilities in the United States and Germany with manufacturing operations in California and Washington State.

City of Fresno's Sustainability Manager Joseph Oldham, who made some recommendations regarding renewable energy in addition to offering examples of what local governments can do to bolster the green economy that will be discussed in a later section.

Rory Cox, California Energy Program Director at Pacific Environment spoke about the benefits of distributed energy generation at the informational briefing hosted by Supervisor (now Assemblymen) Richard Gordon.

Brian Sager co-founder and Vice President of Corporate Development of Nano Solar based in San Jose, CA.

Marvin Mears, Chief Executive Officer - Environmental Products & Technologies Corporation, which sells utility grade biomethane from produced in digesters at dairies.

Greydon Hick, Senior Manager of Contract Energy Solutions and Service of Pacific Gas and Electric

Kyle Ford, Business Development Representative for Merced Irrigation District

Casey Houweling, President and Chief Officer of Houwelings Hothouse Group

Kerby Lecka, Marketing Director of Agromin

Steve Gill, President of Gills Onions

Policy Recommendations Based on Testimony Related to Renewable Energy:

- 1. Establish Robust Feed in Tariff to Encourage Expansion of Distributed Generation.** A Feed in Tariff (FiT) is a mandated, predefined, pre-approved power purchase agreement between renewable energy generators and electric utilities. A FiT is a policy that guarantees a renewable developer a set price for their energy, to be paid by the utility. FiTs are largely responsible for the rapid development of renewable power in Europe, especially Germany and

France. The passage of SB 32 and AB 1613 accompanied by a favorable ruling by the Federal Energy Regulatory Commission (FERC) have paved the way for the CPUC to establish a FiT that could serve to substantially expand the growth of renewable energy throughout the state and could serve to spark the wide spread development of wholesale distributed energy generation.

According to a report contracted by the CPUC and produced by Black and Veatch, there is the potential to generate 15 gigawatts statewide from medium sized (Less than 20 MW) projects. Wholesale distributed energy generation (WDG) provides a number of benefits over large-scale renewable energy generation projects and the power purchase price in a FiT policy should take into consideration those benefits. These benefits include reduced need to build electrical transmission infrastructure, much smaller to nonexistent land use impacts, and a relatively fast development time. These benefits should be included in the price that utilities are required to pay for renewable energy under the FiT. The recent ruling by the FERC will allow for the CPUC to incorporate the avoided costs associated with these locational benefits into the FiT.

2. **Assist California Renewable Energy Manufacturers with Warranty Guarantees for Projects Located within the State.** Warranties are a critical part of financing renewable energy projects. In cases where renewable energy credits are going to be sold or power purchase agreements are made, potential financiers need to know that the renewable energy products will continue to generate a minimum specified output in order to ensure the viability of a project.

Ensuring that sufficient funding is available in the event of product failure can consume a significant portion of a renewable manufacturer's financial resources. For example, for solar panels selling at a price of \$1 per watt, a 1,000 MW project would create \$1 billion of gross revenue. To back the warranty of a solar panel product, the manufacturer typically establishes a warranty reserve at approximately 1.0% of product revenues. 1% of \$1 billion is \$10 million that would have to be kept on hand rather than be used to help the company grow.

Additionally, for renewable energy technologies that have little or no operating history (beyond testing and pilot projects), it is difficult to obtain warranty insurance. Insurance companies often have little knowledge of renewable energy products and no real basis to evaluate the products. This results in an impediment to project financing.

A potential solution for this problem would be to create a state warranty insurance product. Just as the state offers a high-risk health insurance product, one could be offered for new renewable products. New renewable energy projects tend to fail either early or late in their usage timeline – typically if they do not fail right away they tend to last well into their predicted life. So, the risk for a new project is high at the beginning of the expected life then the risk declines before

spiking again towards the end of the expected life of the project creating a “U” shaped risk curve.

A State warranty insurance product for the first five years of a new renewable product could bridge this risk gap and enable a transfer to private insurers once the operating history of a particular renewable product has been established and an insurance provider can make a reasonable actuarial prediction about future performance of the product.

Prior to providing a 5 year limited warranty insurance product to a renewable energy manufacturer, the state could require that the renewable energy product be certified by an independent 3rd party organization such as the National Renewable Energy Laboratory, Underwriters Laboratories, or other appropriate entity verify the initial performance attributes of the renewable energy product.

This state limited warranty insurance could serve to facilitate financing of new renewable projects and allow for faster growth of renewable energy product manufacturers in California.

3. **Expand Local Governments’ Abilities to Produce Renewable Energy Established under AB 2466.** The City of Fresno as well as other local governments in the state expressed frustration at the limitations placed on their ability to produce their own renewable energy. In particular, the City of Fresno had considered generating more of their own energy through renewable projects, but found that they did not work financially due to the 1 MW limit in AB 2466. The following changes to law would increase renewable energy generation by local governmental entities:
 - a. Increase the megawatt limit of any single local government entity to 5 megawatts.
 - b. Allow Joint Powers Authorities to utilize virtual net metering up to a capacity of 10 megawatts.
 - c. Change the geographical boundary restrictions making the boundaries to within the county where the participating local government resides.

These changes would enable local governmental entities to create renewable energy projects that maximize land use and a more economical way of producing their own renewable energy and reducing greenhouse gas emissions.

4. **Limit the Use of Renewable Energy Credits for Renewable Portfolio Standard Compliance to those produced in California.** According to Solar Word, without a solar-specific requirement, utilities will use the cheapest renewable sources, which could include out of state renewable projects to fulfill requirements. Opposition to this idea was the principle reason for Governor Schwarzenegger’s veto of SB 14 and SB 62 (Simitian, 2009). Therefore, Ms. Gagnon made recommendations that would help limit the use of renewable energy credits:
 - a. Made-in-America bid preference.

- b. An open bidding process for all local and state projects involving solar.
- c. Passage of Renewable Portfolio Standards with solar-specific provisions, and limiting tradable Renewable Energy Certificates to 25 percent of total RPS requirement.

Green Building/Energy Efficiency

Energy Efficiency remains the most cost effective way to reduce the negative environmental impacts of energy use. The State of California has a long history of energy efficiency regulations, legislation, and innovation. To meet the state's global warming emission reduction goals and reduce pollution associated with power plants energy efficiency will play one of the most important roles. The Schwarzenegger Administration has set a goal of efficiency based energy demand reductions of 5 gigawatts to 8.1 gigawatts (on peak) and 800 million therms of natural gas consumption by 2020.

Beginning January 1, 2011 cities throughout California will be required to enforce the new California Green Building Standards Code, or the CALGreen Code. Finalized earlier this year by California's Building Standards Commission and the Department of Housing and Community Development. These guidelines represent the first statewide mandatory green building code for newly constructed buildings in the nation.

Participants at informational briefings that included discussions on green building and energy efficiency included:

Doug Kot, Executive Director of US Green Building Council's (USGBC) San Diego Chapter.

Steve Westly, Managing Partner of the Westly Group, also contributed policy ideas to this section.

Peter Hamilton, Director of Energy Services, California Center of Sustainable Energy

Tom Quinn, Vice President of Sales, Lunera Lighting. Based in Silicon Valley, Lunera Lighting is a leader in environmentally friendly, digital LED technology.

Brian Stevens, Chief Operating Officer, Greenhouse Holdings.

Lynn Wilson, Ph.D., and Lisa Cunningham, LEED AP, Owners of Olive Branch Green Building Supply.

Alexander Quinn, Director of Sustainable Economics, Americas Region at AECOM

Policy Recommendations Based on Testimony Related to Green Building:

- 1. Require state buildings to be LEED certified, and provide incentives for cities that make the same requirements for their own buildings and facilities.**
- 2. LEED Point Rating System.** Encourage the USGBC to give a LEED point for buildings that sign a 2 year continuous commissioning service agreement - they already give a point for buildings that sign a 2 year renewable energy purchase through the electricity grid. CALGreen requirements require continuous commissioning for new buildings 10,000 square feet or greater.
- 3. Require State Buildings to monitor their energy use.** Over the last five years several companies have developed software that helps building managers monitor and measure energy use. The state could take the lead by requiring every building to monitor energy use (and potentially to set targets for reducing energy use in accordance with AB 32 goals).
- 4. Extend the State's Solar Tax Credits to LED Lighting.** This provides two key benefits: first, it decreases the cost of systems to end consumers. Second, it allows businesses and homeowners to finance the projects using tax equity funding, which significantly reduces the upfront cost. It also provides a much greater "bang for the buck" than solar, since efficiency has a much faster payback time. Because the fixtures need to be installed in California businesses, it guarantees job creation in California.

Local Government

Local governments throughout California are playing an important role in growing the green economy through various ordinances and programs including measuring emissions from government, the community, and by developing climate action plans. Three-quarters of California's cities and counties, representing more than 90 percent of the state's population, are taking measures to address climate change. In many instances, these measures are also promoted as ways to reduce energy costs and to promote broader sustainability goals.

The increased adoption of "smart growth" policies coupled with green building ordinances, increased recycling, and energy efficiency efforts are just a few of the ways that cities and counties are helping to bolster California's green economy.

Participants at informational briefings that included discussions on local government policies included:

Richard Gordon, Board President of San Mateo County Board of Supervisors

Joseph Oldham, Sustainability Manager of the Sustainable Fresno Division of the Planning and Development Department.

Joe La Mariana, Manager of Solid Waste & Environmental Services, San Mateo County.

Brian Moura, Assistant City Manager, City of San Carlos.

John Sasson, Director of Business Development, Accela, Inc. Accela created a web-based software that provides applicants 24/7 access to their development project. This product, used by numerous state and local governments throughout the United States, expedites permitting and licensing.

Alex Fay, Associate in Mayor's Office of Economic and Business Policy

Policy Recommendations Based on Testimony Related to Local Government:

1. **Update City/County General Plans and Zoning Codes to include land uses and/or prezones that include renewable energy technology and facilities.** Several cities in California have taken a proactive approach to siting of various kinds of desired industrial, light industrial and renewable energy facilities. When cities and counties anticipate or want to attract particular kinds of development, prezoning can serve to expedite the permitting process.
2. **Create a district for cleantech businesses that deal with water, energy, and transportation.** The City of Los Angeles created CleanTech LA, a district designated for cleantech businesses. The area will be redeveloped to include research centers, mixed- use residential and manufacturing centers.
3. **Create a green business certification as part of the business license process for businesses that want to adopt green standards.** Several Bay Area cities has adopted a certification process for businesses that take extra steps to improve their energy efficiency, recycling, and waste management. This certification allows businesses to advertise that they have met selected criteria for "greening" their business.
4. **Prioritize consistent education and enforcement of the CALGreen New Building Energy Efficiency mandatory provisions.** Ensuring that new buildings meet CALGreen code will fall largely on local governments. A concerted effort will have to be made to educate city and county officials as well as contractors and architects. To ensure flexibility, if a local government adopt a CALGreen tier, also accept third-party certified LEED and/or Green Point Rated in lieu of the tier requirements.

5. **Organize residents and businesses to increase development of renewable energy.** The City of San Carlos adopted a partnership with Solar City to provide a Community Discount Program. When multiple businesses and residents agree to purchase solar installations, they all receive a 15-20% discount on 5-20% over typical solar installation and service costs.

Conclusion

Both the Legislative and Executive branches of the California government have made substantial progress in developing a system of incentives and mandates to encourage growth in the green economy. The success of these programs is evident from the growth of California's clean tech industries and related green job growth. Despite the greatest economic recession since the great depression we continue to see increased investment in the green economy resulting from the state's laws and programs designed to protect the environment and public health through development of cleaner technologies and energy sources.

With California's unemployment still over 12%, there is still much more to do. This is why Assemblymember Nava sought out the ideas and insights of business leaders, institutions of higher education, and local government officials to come up with more ways that state can help. These policy suggestions, which will have to be weighed in the context of the state's ongoing fiscal crisis, represent the input of dozens of individuals, businesses, and communities throughout the state. If enacted they will lead to both increasing job growth in the private sector and continue to move California toward its already ambitious public health and environmental protection goals.

Appendix 1: Existing State Programs Related to the Green Economy

At the October 5th informational briefing Assemblymember Nava convened a group of representatives from the California Employment Development Department, the California Workforce Investment Board, the California Public Utilities Commission, the California Energy Commission, the California Air Resources Board, and CA Alternative Energy & Advanced Transportation Financing Authority located in the State Treasurer's Office, to better understand what the state is already doing and to see how the policy recommendations from his informational briefings would fit into existing activities.

Overview of Current State Activities

Job Training

Barbara Halsey, Executive Director - California Workforce Investment Board

The California Workforce Investment Board (CWIB) was established in response to the mandate of the federal Workforce Investment Act (WIA) of 1998. The main focus of the board is to assist the Governor in setting and guiding policy in the area of workforce development. One important area is providing growth in jobs, especially in the green economy.

In 2008, the Governor signed into law the Green Collar Jobs Act (AB 3818), which created the Green Collar Jobs Council. The role of the Green Collar Jobs Council is tasked with understanding the current and future workforce needed of the Green/Clean Economy while developing a comprehensive strategy to prepare California's workforce to meet the needs of businesses supporting the economy and ensure that efforts aimed at improving worker's skills are coordinated and effective. For more information on the Green Collar Jobs Council, please visit:

http://www.cwib.ca.gov/special_committees/green_collar_jobs_council

For two years, the California Workforce Investment Board (CWIB) has been working on taking advantage of the growing technology within the green economy. They have created programs, partnerships and other good practices to help with the economy and job growth. First, they created partnerships with California Energy Commission, the Employment Training Panel, and Labor and Workforce Development Agency to collaborate the California's Green Workforce Initiative, which organizes distinct funding opportunities for green workforce development programs. The California's Green Workforce Initiative receives their funding from the American Recovery and Reinvestment Act (ARRA), Alternative and Renewable Fuel and Vehicle Technology Program (AB 118) funds, Workforce Investment Act Governor's Discretionary funds,

and private and local funds. CWIB funds three programs: State Energy Sector Partnership and Training Grant, Clean Energy Workforce Training Program, and Regional Industry Clusters of Opportunity Grants.

CWIB has been awarded the maximum amount of \$6 million to be used to support six regional teams in the development of training programs in emerging energy efficiency and renewable energy industries. State Energy Sector Partnership and Training Grant will be overseen by the Green Collar Jobs Council and will support action clinics, information exchange, worker training, curriculum publication and other training needed to meet the talent needs in the clean technology and green industries. The six regional teams include:

1. Alameda County Workforce Investment Board
2. Los Angeles City Workforce Investment Board
3. Northern Rural Training and Employment Consortium
4. San Diego Workforce Partnership
5. Sacramento Employment and Training Agency
6. San Joaquin Valley Regional Team

Clean Energy Workforce Training Program (CEWTP) was created with approximately \$26.75 million in funding to 34 regional and local training projects focused on meeting the needs of the Clean Energy sector (relating to energy efficiency, water efficiency, renewable energy, and alternative and renewable transportation technologies). Under this program, training through two programs is provided for 5,600 unemployed, underemployed, and new workforce entrants:

- A. Green Building and Clean Energy Pre-Apprenticeship and Re-training Partnerships;
- B. Alternative and Renewable Fuel and Vehicle Technologies Workforce Development and Training Partnerships.

For the complete list of CEWTP grantees, please visit:

http://www.edd.ca.gov/Jobs_and_training/pubs/wiasfp09-2Awards.pdf

The Regional Industry Clusters of Opportunity Grants is funded with approximately \$2.5 million and supports ten local workforce areas interested in undertaking or furthering regional planning initiatives. This includes providing resources and technical assistance in the areas of diagnosis, partnership development, designing leveraged investment strategies and sustainability planning for regional sector initiatives.

Bonnie Graybill, Deputy Division Chief Labor Market Information Division - Employment Development Department

The California Employment Development Department (EDD) offers a variety of services to millions of Californians under the Job Service, Unemployment Insurance (UI), State Disability Insurance (SDI), Workforce Investment, and Labor Market Information programs. First, the Labor Market Information Division of EDD has developed definitions for the Green Economy and measured the green labor market in California.

Green jobs produce “supply” goods or services that result in:

Generating and storing renewable energy

Recycling existing materials

Energy efficient product manufacturing, distribution, construction, installation, and maintenance

Education, compliance and awareness

Natural and sustainable manufacturing

Goods and services are important when considering the economy in California. However, sustainable business practices (“demand” side) are as equally important in the green economy. With that, EDD conducted a survey to create information about what is going on with the green economy. The survey included the number of workers in green or clean services, businesses that adopted green practices, and emerging occupations for further study related to skills and workforce needs in the green economy. Please below links to the survey as well as EDD’s green page website.

<http://www.labormarketinfo.edd.ca.gov/contentpub/GreenDigest/CaliforniaGreenEconomy.pdf>

<http://www.labormarketinfo.edd.ca.gov/?pageid=1032>

The results of the survey (2010) concluded with about 3.4 percent of all California workers are working on green products and services (433,000), 63 percent of employers report using at least one green business practices; and 78 percent of current green workers were trained on the job. California can lead by example with the green economy. Manufacturing has the most green jobs with over 80,000 jobs. Fortunately, with more green businesses starting up in California, this number can increase within the next couple of years.

Also, in the survey, ‘where are the green jobs in California?’ Southern California has the most distribution of green jobs with over 175,000 and the Bay Area second with over 120,000. As the market increases with supply and demand in the green economy, these numbers can increase where the number of green jobs is more than the number of unemployment.

Lynora Sisk, Associate Deputy Director Workforce Services Branch - Employment Development Department

According to the Employment Development Department (EDD), there are a total of \$130 million in investment state funds for green job training. Total of \$62 million awarded to 66 grantees (since 2009) and \$68 million in local match funds. The fund sources include:

- a. American Recovery and Reinvestment Act
- b. Workforce Investment Act Governor’s 15 Percent Discretionary Funds
- c. State Energy Program with the California Energy Commission
- d. Assembly Bill 118- Alternative and Renewable Fuel and Vehicle Technologies

Besides the many state funds, there are also partnerships (state and local level). The partnerships include Labor and Workforce Development Agency, California Volunteers, Energy Commission, and Employment Development Department. The local agencies involved are community colleges, energy and water utilities, and training organizations. With these funds and partnerships, training programs can be created to help the green economy. For example, the California Volunteers started a training program called Green Jobs Corps. This program funded \$10 million to 11 grantees. The focus is to provide green skills training, continuing education, job placement, and volunteering opportunities to 1500 youths (ages 16-24). The program trains students in urban farming, environmental restoration, energy efficiency, weatherization, and solar installation. For more information, please visit the link below:

<http://www.californiavolunteers.org/index.php/GreenJobsCorps/>

Another program is the Green Building and Clean Energy Retraining Partnerships. The goal of this program is to have classrooms and hands on training that provides green building principles, building science fundamentals, and state building codes for either residential or commercial construction sectors. The retraining program will target unemployed or underemployed workers to focus on construction jobs.

Stewart Knox, Executive Director - Northern Rural Training Employment Consortium (NoRTEC)

As one of the six regional teams under the California Workforce Investment Board, Northern Rural Training Employment Consortium (NoRTEC) covers 11 counties (geographically 25 percent of California) in Northern California: Butte, Del Norte, Lassen, Modoc, Nevada, Plumas, Shasta, Sierra, Siskiyou, Tehama, and Trinity. NoRTEC is currently working on several training programs through community colleges that prepare students for jobs in energy efficiency. For example in construction, green building certification, home energy rater, solar PV, solar thermal, and environmental control technology.

To accomplish these programs, NoRTEC created green initiative goals while focusing on their main goal to systematically transform a resource-based, declining economy:

1. Accessing the market opportunities
2. Creating new alternative energy projects which can increase the North State renewable portfolio standard
3. Implementing new processes to reduce greenhouse gas emissions,
4. Collaborating for climate prosperity
5. Training and placement of dislocated workers into jobs
6. Building capacity and collaboration at the local level and
7. Bolstering economic competitiveness

Overall, with the State's investment in the green economy, NoRTEC has been able to form a regional collaboration, which is focused on the opportunities, new products and technologies, transformation of rural areas, and leverage limited resources.

Education and Training at UC, CSU, and Community Colleges

During the seven informational briefings, Assemblymember Nava visited three school sites: UC Merced, CSU-Channel Islands, and San Diego Miramar College. All three locations have “green” education and training programs as well as ambitious green building and energy efficiency targets. Each school has developed a green policy plan with their campus to adopt and follow. The UC, CSU, and CCC systems has been successful “being green” because everyone is involved to promote education and training in green topics.

The California State University provides a variety of environment-related degree programs within their 23 campuses. The programs range from Resource Management to Environmental Studies to Metrology. As you can see from this range there are many choices when deciding on the curriculum. The Universities and Community Colleges offer the same variety of programs in the environmental and sustainable fields.

According to the Princeton Review (2011), UC Berkeley, UC Santa Barbara, and UC Santa Cruz have the highest ratings for being green campuses in the UC system. UC Santa Barbara has the most LEED certified green buildings. UC Santa Cruz obtains 20 percent of their energy from renewable sources. UC Berkeley created a goal to reduce their greenhouse gases to 1990 values by 2014 (6 years prior of the AB 32 goal). The school systems are doing their part of creating a model for adopting green policies and implementing those standards to support the environment. Fortunately, there are many more examples of what UC, CSU, and CCC are doing with their campuses to encourage more sustainable design and green building.

All campuses in California provide a way to educate and train students and professionals to become knowledgeable in sustainability and green building. Education and training shall increase the demand, which will increase the supply for green products and technologies in the green economy.

Participants at informational briefings that included discussions on Education and Training:

Tom Lollini, Campus Architect at UC Merced

Heather Poiry, Graduate Solar Researcher at UC Merced

Carl Blumstein, Director of California Institute for Energy and Environment

Dr. Ashish Vaidya, Dean of Faculty at CSU- Channel Islands

Dr. Daniel Wakelee, Associate of Dean of Faculty at CSU- Channel Islands

Dr. Donald Rodriguez, Associate Professor of Environmental Studies

John Gormley, Manager of Design Services

Dr. David Bleckham, Associate Professor of Industrial Technology/Power, Energy, and Transportation

Dr. Patricia Hsieh, President of San Diego Miramar College

Peter Zschiesche, Board of Trustees for San Diego Community College District

Dr. Constance Carroll, Chancellor of San Diego Community College District

David Umstot, Chancellor of Facilities at San Diego Community College District

Greg Newhouse, Dean of Advanced Transportation, Technology and Energy at San Diego Miramar College

Peter Davis, Statewide Director of ATT & Energy Initiative/4-Energy

Financing, Incentives, and Mandates

Christine Solich, Executive Director, CA Alternative Energy & Advanced Transportation Financing Authority - State Treasurer's Office

The California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) provide financing for facilities that currently use alternative energy sources and technologies. They also provide financing for facilities that need to develop and commercialized advanced transportation technologies that conserve energy, reduce air pollution, and promote economic development and jobs.

CAEATFA was originally established in the 1980's, but it was virtually dormant until 2007. Treasurer Lockyer decided to revive the authority to provide financial assistance in promoting the development of renewable energy sources and advanced transportation technologies in California. The main purpose is to provide more financial assistance for alternative renewable energy; i.e. solar, biomass, wind, hydroelectric, geothermal, and etc.

CAEATFA created a program to extend a Sales and Use Tax Exclusion to companies that manufacturer Zero Emissions Vehicles in California. An example of a company that used this program is Tesla Motors (a start up electric car manufacturer) located in Fremont, CA. In addition, the company used training from EDD and WIB for their employees to learn and operate green products that will be used in the facility. Since the facilities opened Tesla has been able to save 9 percent on purchases with more savings to come. The company has hired 250 employees, with the expectations to hire over 1,000 more in the next coming years especially when they are able to increase their manufacturing capabilities.

In 2010, the Governor signed two pieces of legislation (SB 71 and SB 77) under CAEATFA statute to stimulate green jobs and to continue the goal of reducing energy consumption and pollution.

1. SB 71- Sales and Use Tax Exclusion for Green Manufacturers
2. SB 77- Property Assessed Clean Energy Bond Reserve Fund (PACE)

SB 71 provides a sales and use tax exclusion to CA manufacturers on property purchased and utilized in the design, manufacture, production or assembly of advanced transportation technologies or alternative resources. Currently, CAEATFA has granted \$100 million in tax exclusions and expects about 30 applications to be submitted in the next couple of months. Two companies under this program are Solar Millennium and First Solar. Solar Millennium, a solar thermal system manufacturer company with a facility in Blythe, CA created about 1,000 new green jobs. First Solar (a solar module manufacturer) has plans to open a next generation pilot manufacturing facility in Santa Clara, CA. Once the plant is open, First Solar will hire 150 workers per shift with three shifts.

SB 77 (PACE fund) set aside \$50 million as a reserve fund to support eligible cities and counties who issue PACE backed bonds. The financing is for residential and commercial property owners who will install energy efficiency and renewable energy improvements with costs between \$2,000 and \$60,000 approximately. The participants repay the cost of the project over 20 years through an annual assessment on their property tax bill, (attached to the property rather than the individual).

One of the many goals for this program was to provide more green jobs. However, the PACE program has been placed on hold with an uncertain future as a result of the Federal Housing Finance Agency's pronouncement regarding the lien statue of FNMA/FMAC mortgage loans. Even with PACE on hold, the CA Energy Commission is assisting to develop alternative financing options to homeowners. Business owners and homeowners can still receive assistance from the state with buying green technology for their property.

CAEATFA is a conduit issuer of bonds for alternative energy and advanced transportation projects. Bonds were issued to CalTrans to put solar panels on their buildings. Currently, they have 70 projects approved, but 15 have been completed. The bonds have a one and a half percent interest rate for over 15 years and receive more than \$2 million in energy cost savings from the installed solar panels during that same time period.

La Ronda Bowen, Ombudsman - Air Resources Board

Since its formation in the 1970's, the California Air Resources Board (CARB) has worked with the public, the business sectors (especially small businesses), and local governments to protect the public's health, the economy, and the ecological resources through the most cost- effective reduction of air pollution. CARB's job is to ensure the

engagement of all constituents in the development and implementation of California's clean air policies and laws.

CARB has partnerships with CA Energy Commission, Public Utilities Commission, and Employment Department. With these partnerships, CARB has taken charge with overseeing and carrying out AB 32 (Global Warming Solutions Act of 2006), SB 375 (Sustainable Communities Strategy), and other ambitious legislations that deal with protecting the environment and small businesses throughout California. CARB plays an important role in stimulating innovation in the economy to ensure that California takes steps to clean the air and protect the environment.

CARB provides three incentives to small business owners. First, Small Business Innovation and Research funds approximately \$2 Billion to small businesses for research and commercialization. Second, Carl Moyer Fund helps with air districts obtain cost-effective early emission reductions from mobile sources. Moyer has helped fund clean school buses and trucks. Third, AB 118 (Núñez) provides money for advanced technology demonstration projects such as hybrid trucks and buses. AB 118 created the Alternative and Renewable Fuel and Vehicle Technology Fund and expands the Energy Commission Alternative Fund. This program will be available until January 2016.

At the informational briefing, CARB mentioned that cars are the best example of regulatory mandates, incentives, and innovation creating a new paradigm. This example includes the Low and Zero vehicle mandates (LEV's and ZEV's), which spurred investment in battery and hybrid technologies to meet California's cleanest exhaust emission standards.

The benefit of CARB's ZEV mandates is customers purchasing these vehicles qualify for a \$5,000 rebate. The idea is to lower greenhouse gas emissions that are produced by vehicles and light trucks. These clean technology vehicles can help with the control of smog-causing pollutants that form in the air today. For more information on these two programs, please visit the links: <http://www.arb.ca.gov/msprog/zevprog/zevprog.htm>
<http://www.arb.ca.gov/msprog/levprog/levprog.htm>

SB 375 (Redesigning Communities to Reduce Greenhouse Gases) enhances California's ability to reach AB 32 goals by promoting good planning with more sustainable communities in California. SB 375 requires CARB to develop regional greenhouse gas emission reduction targets for passenger vehicles through integrated land use, housing, and transportation planning. Under this measure, developers can get relief from certain requirements under the California Environmental Quality Act (CEQA) if their new residential and/or mixed use projects are consistent with the targets for 2020 and 2035. <http://www.arb.ca.gov/cc/sb375/sb375.htm>

Stimulating the Green Economy

Jeanne Clinton, Manager for Climate Strategies - Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned electric, natural gas, telecommunications, water, rail transit, and passenger transportation companies. CPUC serves the public interest by protecting consumers and ensuring the provision of safe, reliable utility service and infrastructure at reasonable rates with a commitment to environmental enhancement and a healthy green economy.

In 2003, CPUC and the Energy Commission adopted the California Action Plan to reduce greenhouse gas emissions. In 2005, there was a part 2 to reflect the policy changes that happen between 2003 and 2005. In 2008, there were plans to create another updated action plan, but due to the success of AB 32, an update was not needed. For more detailed information on the California Energy Action Plan:

<http://www.cpuc.ca.gov/PUC/energy/resources/Energy+Action+Plan/>

Besides providing resources, CPUC also drives large scale energy efficiency funding and deployment. The funding includes \$1 billion a year, which can create approximately 15,000-18,000 jobs. These programs target 6 million square feet commercial and institutional building space and 12 million homes. The idea of these programs is to reduce the energy consumption at least 20-40 percent. The water, utilities and training/education agencies use this funding to create jobs as well as to reduce the energy consumption in the community.

CPUC's Low Income Energy Efficiency (LIEE) program grants \$300 million/year. This targets low-income households (over 5 million homes) with fully subsidized energy efficiency measures by 2020. In 2011, over 350,000 homes were authorized to have energy efficient HVAC, and other energy appliance to be installed in their home. Beside the environment part of this program, it also created many jobs to be contract out for installation as well as manufacturing.

The California Solar Initiative (CSI) is a solar rebate program for California consumers that are customers of the investor-owned utilities- i.e. Pacific Gas and Electric (PG &E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG & E). These rebate programs are for residential and commercial customers. The budget in investor-owned utility areas is approximately \$2.2 billion for 2007-2016. Since the start of this program, \$1.4 billion has been committed to installed and pending projects throughout California. This program provides installation and manufacturing jobs in the state. Within the CSI program, there are two programs: SASH and MASH.

Single Family Affordable Solar Homes (SASH) provides solar incentives on qualifying affordable single family housing. The goals of the SASH program are to:

1. Decrease electricity usage by solar installation and reduce energy bills without increasing monthly expenses;

2. Provide full and partial incentives for solar systems for low-income participants.

<http://www.cpuc.ca.gov/PUC/energy/Solar/sash.htm>

Multi-family Affordable Solar Homes (MASH) program offers incentives to solar projects. This program has similar goals to the SASH program, but gives the opportunity for resident owners in multifamily homes to have solar installed. It shows that it is not for only single-family homes.

<http://www.cpuc.ca.gov/PUC/energy/Solar/mash.htm>

Since 2001, Self Generation Incentive Program (SGIP) has funded small-scale wind turbines, fuel cells, and other distributed energy resources. The program provides incentives to support existing, new, and emerging distributed energy resources. With that, this program has invested over \$620 million in incentives to support 1,300 operational projects, which equals about 350 MW. With addition plans of authorizing over \$300 million to new projects within the 2010-2011 calendar year. The link below includes more information and a handbook for customers use:

<http://www.cpuc.ca.gov/PUC/energy/DistGen/sgip/>

The California Public Utilities Commission has authorized billions of ratepayers dollars and provided a variety of programs in clean energy solutions. These programs have helped create jobs in CA as well as help create clean energy solutions.

Larry Rillera, Manager, Clean Energy Manufacturers Program - California Energy Commission

The California Energy Commission (CEC) is the state's primary energy policy and planning agency. CEC plays an important role in California's Green Economy by promoting energy efficiency by setting the state's appliance and building efficiency standards and working with local government to enforce those standards. In addition, CEC has created programs to develop and implement clean energy manufacturing: Alternative and Renewable Fuels and Transportation Vehicles, Clean Energy Business Financing Program, and Alternative and Renewable Fuel program.

Alternative and Renewable Fuel and Vehicle Technology program (AB 118) reduces the state's petroleum dependency and help attain the state climate change policies.

The Clean Energy Business Financing Program (ARRA) targets clean energy manufacturers of specific energy efficiency and renewable energy components, systems, and products. The minimum funding is \$50,000 and maximum is \$5,000,000 loan reimbursements.

Throughout California, there are ten solar thermal projects seeking American Reinvestment and Recovery Act funding. Six of the 10 projects have been approved and the rest are currently in the CEC sitting process.

CEC's Alternative and Renewable Fuel program provides \$4 million to CA Community Colleges Chancellor's office (CCCCO) to support clean technology curriculum. This program provides funding in production and manufacturing in renewable energy. Besides working with community colleges, CEC also has partnerships with Employment Development Department and California Workforce Investment Board. These partnerships provides funding for an assortment of training programs and jobs in the green economy.

Recently, the California Energy Commission received a state leadership in clean energy award from the Clean Energy States Alliances for its Renewable Energy Transmission Initiative. The plan is to minimize the environmental impacts and economic costs of adding renewable power to the transmission grid. The idea is to receive approximately 33% of California's power from renewable sources by 2020.

[http://www.solarnovus.com/index.php?](http://www.solarnovus.com/index.php?option=com_content&view=article&id=1609:state-of-california-wins-national-clean-energy-award&catid=45:politics-policy-news&Itemid=249)

[option=com_content&view=article&id=1609:state-of-california-wins-national-clean-energy-award&catid=45:politics-policy-news&Itemid=249](http://www.solarnovus.com/index.php?option=com_content&view=article&id=1609:state-of-california-wins-national-clean-energy-award&catid=45:politics-policy-news&Itemid=249)

Appendix 2: Legislation Relevant to California's Green Economy

The California Legislature has been increasingly proactive in areas that bolster growth in California's green economy. Areas of legislation have included promoting clean energy, improving water efficiency, green building standards, reducing waste, lowering emissions, and a variety of other topics that increase sustainability. The following legislation, accompanied by oftentimes linked to state regulatory activity, has helped to set the stage for rapid growth in California's green sectors. This list is not exhaustive and represents a sampling of significant legislation signed into the law by the Governor since 2000. It is intended as a brief review of bills related to the green economy.

Highlights of Legislative Efforts Over the Last 10 Years

AB 970 (Ducheny, 2000) – Established the Self Generation Incentive Program (SGIP). The SGIP has provides capacity-based incentives to support existing, new, and emerging distributed energy resources in California. The program provides rebates for qualifying distributed energy systems installed on the customer's side of the utility meter. Initial qualifying technologies included photovoltaic, wind turbines, fuel cells, internal combustion engines, microturbines, and gas turbines. Starting January 1, 2008, the SGIP was limited by statute to providing incentives for wind and fuel cell technologies only. Current qualifying technologies include wind turbines, fuel cells, and corresponding energy storage systems.

SB 1771 (Sher, 2000) - California Climate Action Registry. This bill established the California Climate Action Registry to establish, among other things, emissions baselines

against which any future federal greenhouse gas emission reduction requirements may be applied, to encourage voluntary actions to increase energy efficiency and reduce greenhouse gas emissions, and record voluntary greenhouse gas emissions made after 1990. CCAR was later given an expanded mandate with SB 812 (Sher, 2002).

AB 29 X1 (Kehoe, 2001) - Created various energy efficiency programs through existing delivery mechanisms at the California Energy Commission (CEC) and California Public Utilities Commission (CPUC) and provides some new programs through the California Conservation Corps.

SB X2 17 (Brulte, 2001) - Allows a credit against the personal income and bank and corporation tax related to the purchase and installation in this state of a solar energy system.

SB 812 (Sher, 2002) – Expands the responsibilities of the California Climate Action Registry (Registry) which records and registers voluntary greenhouse gas emissions reductions made since 1990 by entities participating in the Registry.

AB 58 (Keely, 2002) - Eliminated sunset date of net metering program and preserved 1 MW, single meter net metering. It also Tasked the CPUC with developing a study to determine net metering costs and benefits; Establishes “co-metering” (net metering for energy portion only) for wind over 50 kW and municipals over 10 kW and preserved “Time of Use” net metering availability. Sets a 1/2 percent per investor owned utility “ceiling” for total capacity of net metered customers.

AB 1493 (Pavley, 2002) - Requires the Air Resources Board (ARB) to develop and adopt, by January 1, 2005, regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from passenger, light-duty, and other non-commercial vehicles. Following the adoption of regulations, they were tied up in court until 2009 when the US EPA granted California a waiver. Seventeen states have since adopted California’s fuel efficiency requirements and this bill is largely credited with creating pressure for more stringent federal fuel efficiency requirements.

SB 1038 (Sher, 2002) - Continued the Public Interest Energy Research Program and the Renewable Energy Program operated by the CEC. The programs had previously been extended with SB 90 (Sher, 1997).

SB 1078 (Sher, 2002) - Required utilities to increase procurement of electricity from renewable energy sources by at least one percent per year. This bill was a follow-up on a previous effort by Senator Sher, SB 532 and SB 78 X2 by Polanco, to increase renewable energy procurement by utilities.

AB 1685 (Leno, 2003) - Extends the Self-Generation Incentive Program created by AB 970 (Ducheny, 2000) until January 1, 2008, and requires that combustion-operated distributed generation projects meet emissions targets in order to qualify for SGIP rebates.

SB 288 (Sher, 2003) - This bill prohibits an air district from amending or revising its new source review rules or regulations to be less stringent than those that existed on December 30, 2002.

AB135 (Reyes, 2004) - Authorizes the CEC to expend up to \$60 million of funding allocated to the Renewable Resources Trust Fund for emerging renewable technologies--primarily to fund incentives for small-scale photovoltaic projects.

AB594 (Leno, 2004) - Establishes a net metering program between the City and County of San Francisco through Hetch Hetchy Water and Power photovoltaic generation facilities and Pacific Gas and Electric megawatts of solar power.

AB 1684 (Leno, 2004) - Requires stricter NOx emission standards for distributed generation technologies receiving rebates in the Self-Generation Incentive Program and adds waste gas projects to list of eligible for rebates.

AB 2473 (Wolk, 2004) - Enhances the Solar Rights Act (AB 3250, Levine, 1978) Strengthens existing law prohibiting local governments from placing onerous restrictions on installing solar energy systems that meet specified requirements.

AB 2717 (Laird, 2004) - This bill declares the Legislatures intent that the California Urban Water Conservation Council convene a stakeholder workgroup to prepare a report by December 31, 2005, that includes recommendations for improving urban water use efficiency.

AB 1007 (Pavley, 2005) - Requires the Air Resources Board, in consultation with the CEC and other specified state agencies, to develop and adopt a state plan to increase the use of alternative fuels, as specified, by June 30, 2007. The plan includes specific elements, including an evaluation of alternatives in the context of a full fuel-cycle assessment of various air pollutants and related substances recognized as harmful to human health and other issues. The bill additionally requires that goals established for the years 2012, 2017, and 2022 to accomplish specified purposes (e.g., maximizing environmental and public health benefits, ensuring there is no net increase in air or water pollution, minimizes costs to the state) so long as these are consistent with existing or future state board regulations.

AB 32 (Núñez and Pavley, 2006) – The Global Warming Solutions Act of 2006. This bill, the first of its kind, required the California Air Resources Board to develop regulations and market mechanisms aimed at reducing California's greenhouse gas emissions by 25 percent by 2020. Mandatory caps are set to begin in 2012 for significant sources and ratchet down to meet the goal of reducing greenhouse gas emissions to 1990 levels by 2020.

AB 1969 (Yee, 2006) - Requires an electrical corporation to purchase electricity from renewable electricity generation facilities that are owned and operated by public wastewater agencies.

AB 1881 (Laird, 2006) - Reauthorized the Department of Water Resources to prepare an updated model local water efficient landscape ordinance for adoption by local governments and requires the Energy Commission to adopt performance standards for landscape irrigation equipment and bans the sale of noncompliant irrigation equipment after January 1, 2012.

SB 1 (Murray, 2006) – Established goal of installing 3000 MW of solar generation capacity, establishing a self-sufficient solar industry, and placing PV systems on 50% of new homes by 2019.

SB 107 (Simitian and Perata, 2006) – Accelerates the Renewables Portfolio Standard requirement from 2017 to 2010. The RPS is a program that requires investor-owned utilities to, among other things, achieve a 20 percent renewable electricity portfolio. The bill also makes other several other changes.

SB 1368 (Perata, 2006) – Limits long-term investments by state's utilities in power plants that don't meet an emissions performance standard (EPS) jointly established by the CEC and the CPUC. Per the subsequent regulations, the standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 lbs CO₂ per megawatt-hour (MWh). This will encourage the development of power plants that meet California's growing energy needs while minimizing their emissions of greenhouse gases.

AB 118 (Núñez, 2007) – Enacted the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 and established the Enhanced Fleet Modernization Program and the Air Quality Improvement Program.

AB 236 (Lieu, 2007) – Makes several changes to current policies regarding the purchase of vehicles for state and local government fleets in order to increase fuel efficiency and the use of alternative fuels, and expands the currently required information to be compiled and reported by the Department of General Services to the Legislature and the Governor.

AB 662 (Rusking, 2007) - This bill requires the California Energy Commission to establish minimum levels of water efficiency for appliances the use of which requires a significant amount of water on a statewide basis.

AB 1103 (Saldaña, 2007) - Requires electric or gas utilities to provide owners or operators of nonresidential buildings with specified information regarding the energy consumption of the building, and for building owners to provide such information to prospective tenants and owners.

AB 1470 (Huffman, 2007) – The Solar Hot Water Heater Act created a \$250 million subsidy program for solar hot water heaters with the goal of promoting the installation of 200,000 solar hot water systems in California by 2017.

AB 1560 (Huffman, 2007) - Requires the CEC to incorporate standards for water efficiency and conservation into the existing regulations governing energy efficiency. The bill does not include water efficiency in the requirement linking energy efficiency standards to building permits.

AB 1613 (Blakeslee, 2007) – Establishes the Waste Heat and Carbon Emissions Reduction Act. Permits the CPUC to require utilities to purchase the excess combined heat and power (CHP)-generated electricity, require a publicly owned utility to provide a market for excess CHP-generated electricity, require utilities to include CHP technologies in their procurement plan to the maximum degree that is cost-effective. Requires the PUC to establish a pilot program that provides financing mechanisms, permits the PUC to apply the costs and benefits over all customer classes, exempts the CEC from the Administrative Procedures Act when adopting guidelines, and provides other incentives to support and facilitate both customer- and utility-owned CHP systems.

AB 811 (Levine, 2008) – Authorizes City and County officials throughout California to enter into contractual assessments with willing property owners to finance the installation of distributed generation, renewable energy sources and energy efficiency improvements.

AB 1451 (Leno, 2008) - AB 1451 would extend the sunset date for the exclusion of an active solar energy system from the definition of new construction for property tax reassessment purposes through the 2015-16 fiscal year. The bill would also allow the value of the exclusion to apply to the initial purchaser of a new building, as specified.

AB 2267 (Fuentes, 2008) - Requires the CEC to give priority to California-based entities in making awards pursuant to the Public Interest Energy Research program and provides a 20% additional incentive for California suppliers that install eligible distributed generation resources for the Self-Generation Investment Program.

AB 2466 (Laird and Huffman, 2008) - Establishes a program for local governments to produce renewable energy and sell that energy to the electric utility at the same rate as the generation portion of the electricity bill. Under this bill utilities are required to purchase electricity from an eligible renewable resource that is no larger than one megawatt.

AB 3018 (Núñez, 2008) - Establishes the Green Collar Jobs Council under the California Workforce Investment Board. The Green Collar Jobs Council is tasked with understanding the current and future workforce needs of the Green/Clean economy, developing a comprehensive strategy to prepare California's workforce to meet the needs of businesses supporting the economy and ensure that efforts aimed at improving worker's skills are coordinated and effective.

SB 380 (Kehoe, 2008) – This bill modifies a program that allows small-scale renewable generators to sell renewable electricity to an investor-owned utility at a rate set by the

Public Utilities Commission so any customer of the three largest IOUs may participate in the program.

SB 375 (Steinberg, 2008) – Provides emissions-reducing goals for which regions can plan, integrates disjointed planning activities, and provides incentives for local governments and developers to follow new conscientiously- planned growth patterns.

SB 1754 (Kehoe, 2008) - Authorizes the California Alternative Energy and Advanced Transportation Financing Authority (Authority) to enter into power purchase agreements (PPAs) with public and private entities for the purchase and sale of alternative source energy or projects.

AB 2855 (Hancock, 2008) - Establishes, commencing with the 2009-10 school year, the green technology partnership academies and the goods movement partnership academies as two new categories of California partnership academies (CPAs) and requires the Superintendent of Public Instruction (SPI), commencing in the 2009-10 school year, to prioritize partnership academy grants for programs that focus on green technology and goods movement.

AB 474 (Blumenfield, 2009) - Expands the authorization that allows public agencies to enter into contractual assessments to finance the installation of specified improvements to now include water efficiency improvements.

AB 920 (Huffman, 2009) - Expands the current net-metering programs for wind and solar, to allow the net-metered customers to sell any excess electricity they produce over the course of a year to their electric utility.

AB 758 (Skinner, 2009) - Requires the CEC, by March 1, 2010, to develop and implement a comprehensive program to achieve greater energy savings in existing residential and nonresidential buildings that fall below the current Title 24 building standards. This bill also requires the CPUC and publicly owned utilities to investigate and implement energy efficiency programs. The bill requires the PUC to open a proceeding to investigate the ability of electrical corporations to provide various energy efficiency financing options to their customers for the comprehensive energy efficiency program.

AB 1106 (Fuentes, 2009) - Authorizes the CEC to contract with small business financial development corporations (FDCs) to expend Alternative and Renewable Fuels and Vehicle Technology Program (ARF Program) funds.

SB 412 (Kehoe, 2009) - Extends the sunset date of the Self-Generation Incentive Program through January 1, 2016, restricts the amount the CPUC can direct the utilities to collect, and expands the eligible resources to include all self-generation technologies PUC determines will support the state's goals for the reduction of emissions of greenhouse gases, that meet specified efficiency standards.

SB 32 (Negrete-McLeod, 2009) - Expands the current feed-in-tariff (FIT) program to allow for renewable resources that are up to three megawatts in size to qualify and to require the California Public Utilities Commission to include the value of environmental compliance costs in the rate paid to generators under FIT.

SB 695 (Kehoe, 2009) - Makes several changes to the states regulation of electricity, including allowing for increases in some residential electricity rates, increasing the ability of retail customers to purchase electricity directly from generators, prohibiting mandatory time-variant pricing, and making changes to existing energy efficiency programs.

SB 1340 (Kehoe, 2009) - expands the use of the voluntary contractual assessment to finance electric vehicle charging infrastructure affixed on real property and expands the Property Assessed Clean Energy Reserve program to assist local jurisdictions in financing the installation of electric vehicle charging infrastructure.

SB 17 (Padilla, 2009) - Requires the California Public Utilities Commission (PUC), in consultation with other state agencies and key stakeholders, to determine the requirements for a smart grid deployment plan and requires the utilities to submit smart grid plans to PUC.

SB 104 (Oropeza, 2009) - Adds nitrogen trifluoride (NF₃) to the list of greenhouse gases (GHG) regulated by the Air Resources Board (ARB) pursuant to the Global Warming Solutions Act of 2006 (AB 32).

AB 210 (Hayashi, 2009) - Clarifies that cities and counties are authorized to adopt green building standards.

AB 262 (Bass, 2009) - Provides direction and authorization to the California Energy Commission (CEC) regarding the use of money received pursuant to the federal American Recovery and Reinvestment Act of 2009 (ARRA) for energy-related activities.

SB 7 X7 (Steinberg, 2009) - requires the state to achieve a 20 percent reduction in urban per capita water use by December 31, 2020, requires agricultural water management plans and efficient water management practices for agricultural water suppliers, and promotes expanded development of sustainable water supplies at the regional level.

AB 44 (Blakeslee, 2010) - Expand the use of voluntary contractual assessments to include financing electricity purchase agreements by expanding the definition of "permanently fixed to real property" to include systems attached to a residential, commercial, industrial, agricultural, or other real property pursuant to an electricity purchase agreement between the owner of the system and the owner of the assessed property.

AB 2514 (Skinner, 2010) - Requires the CPUC to determine appropriate targets for load serving entities to procure energy storage systems and requires load serving entities to

meet any targets adopted by the PUC by 2015 and 2020. Requires publicly owned utilities to set their own targets for the procurement of energy storage and meet those targets by 2016 and 2021.

AB 1947 (Fong, 2010) - Permits a publicly owned utility (POU) to implement a solar program that allows customers to offset part or all of their electricity demand, with a solar energy system not located on the premises of the consumer.

SB 71 (Padilla, 2010) - This bill authorizes the California Alternative Energy and Advanced Transportation Financing Authority to approve a sales and use tax exemption on tangible personal property utilized for the design, manufacture, production, or assembly of advanced transportation technologies or alternative energy source products, components or system. The sales and use tax exemption would sunset on January 1, 2021.

AB 684 (Blumenfield, 2010) - Green Technology Jobs- creates an innovative state program to create jobs in the clean technology sector by providing various financial incentives to start-up companies producing products that reduce greenhouse gas emissions, conserve energy and reduce pollution.

SBX8 34 (Padilla, 2010) – Authorizes the Department of Fish and Game, in consultation with the CEC, to develop mitigation actions, including advance mitigation and interim mitigation strategies, to fully mitigate the impacts on endangered and threatened species of solar energy projects that are eligible for federal American Recovery and Reinvestment Act (ARRA) funding, and are proposed for siting in the California desert in the Desert Renewable Energy Conservation Plan planning area. The bill also authorized eligible project developers to meet their mitigation obligations by voluntarily paying fees for deposit into a fund which would be used by DFG to complete the mitigation actions.

SB 77 (Pavley, 2010) - Creates a state Property Assessed Clean Energy (PACE) Reserve program to assist local jurisdictions in financing the installation of distributed generation of renewable energy sources or energy or water efficiency improvements.

SB 918 (Pavley, 2010) - Requires the State Department of Public Health to develop and adopt uniform water recycling criteria for indirect potable water reuse, and investigate the feasibility of developing uniform water recycling criteria for direct potable reuse.

AB 1507 (Lieu, 2010) – Requires the ARB to revise project guidelines for the Carl Moyer Memorial Air Quality Standards Attainment (Carl Moyer) Program by July 1, 2011, for a project that reduces greenhouse gas (GHG) emissions, to allow certain federal and state funds to be used on a project without being factored into cost-effectiveness calculations.

AB 2724 (Blumenfield, 2010) - Expands the California Solar Initiative Program eligibility for any state agency for incentive payments for facilities sized up to 5 megawatts with a cap of 26 MW.

AB 177 (Ruskin, 2010) - increases the penalties for those who fraudulently claim to qualify as a disabled veteran-owned enterprise or small business, when applying for state contracts. At a time when veterans are returning from Iraq and Afghanistan and jobs are scarce, we must protect the rights of our servicemen and women. The bill also ensures that small businesses, in general, can compete for state contracts on a level playing field with larger enterprises.

AB 231 (Huber, 2010) - creates jobs by expediting construction projects by eliminating duplication and reducing time in the CEQA process. AB 231 streamlines CEQA by eliminating duplication and reducing time in the CEQA process without undermining any of its environmental protections. The bill is an ongoing demonstration of the Legislature's interest in making CEQA as workable and as protective as possible.

AB 2696 (Bass, 2010) - empowers the state's Green Collar Jobs Council to take full advantage of federal stimulus funding to promote jobs and boost green technologies in our state. This bill is the second part of an effort started in the previous session with AB 3018 (Bass and Núñez), a bill to create an agency that would exclusively serve as a catalyst for the creation of green jobs. AB 2696 makes it the responsibility of the GCJC to work with a number of organizations to align workforce development services with green economy efforts.

AB 1846 (V.M. Pérez, 2010) - is a regulatory reform bill that benefits business and job creation while assuring environmental integrity. The bill expedites the environmental review process for projects that involve upgrades or retrofits to bring businesses into compliance with the Global Warming Solutions Act of 2006 (AB 32). Specifically, it empowers state water and air agencies with the discretion to use a focused environmental impact report for projects that install pollution control equipment or change to a more sustainable product.

AB 1873 (Huffman, 2010) - boosts green jobs by making Property Assessed Clean Energy (PACE) programs more attractive to local governments by reducing the cost of the loans made through contractual assessments to property owners to finance energy and water efficiency improvements.